

LISTING OF THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A non-contact passive medical scanning imager for imaging subcutaneous body temperature comprising:

means for scanning a target area of a patient;

a detector configured to sense millimeter wave electromagnetic radiation that is emitted from the target area of the patient;

a collector configured to collect the radiation that is emitted from [[a]] the target area of the patient and directing that radiation along a collection path to the detector in such a manner that the collected radiation has a defined sensitivity profile across and along substantially the entire length of the collection path;

electronic circuitry configured to generate image data associated with the target area of the patient based on the collected radiation; and

means for scanning a target area of the patient, and
isolation means for isolation in the collection path of the collected radiation for preventing signal leakage from the detector being emitted from the detector towards the patient's body.

2. (Previously Presented) An imager as claimed in claim 1, wherein the collector comprises a corrugated feedhorn.

3. (Previously Presented) An imager as claimed in claim 1, wherein the collector comprises a waveguide configured to supply radiation to the detector.

4. (Previously Presented) An imager as claimed in claim 1, wherein the collector collects the collected radiation having a Gaussian sensitivity profile.

5. (Previously Presented) An imager as claimed in claim 2, wherein the feedhorn is configured to convert a fundamental Gaussian mode beam of radiation into a waveguide mode in which radiation propagates through a wave guide to the detector.
6. (Previously Presented) An imager as claimed in claim 1 wherein the collector collects the collected radiation having a Bessel sensitivity profile.
7. (Previously Presented) An imager as claimed in claim 6 including an axicon in the path of the collected radiation and configured to convert a Gaussian sensitivity profile of the collected radiation to the Bessel sensitivity profile.
8. (Previously Presented) An imager as claimed in claim 1 wherein the collector includes means for focusing.
9. (Currently Amended) An imager as claimed in claim 1, wherein the scanning means for scanning is operable to be repeatedly sweep the collection path rotated through 360° in the collection path.
10. (Currently Amended) An imager as claimed in claim 9, wherein the scanning means for scanning comprises a deflector that is rotatable about one axis to scan the collection path in a scanning direction across a body.
11. (Previously Presented) An imager as claimed in claim 10 further comprising a support that facilitates controlled line-indexing for moving the collection path in a direction perpendicular to the scanning direction.

12. (Previously Presented) An imager as claimed in claim 11, wherein the support is operable to swing the deflector about a second axis perpendicular to the one axis.
13. (Previously Presented) An imager as claimed in claim 1, wherein the imager is operable to form an image from emitted radiation in the frequency range of 90-100GHz.
14. (Previously Presented) An imager as claimed in claim 1, further comprising at least one calibration load for emitting millimeter wave radiation at a pre-determined intensity, the collector being operable to direct said radiation to the detector to enable the imager to be calibrated.
15. (Previously Presented) An imager as claimed in claim 14, wherein the calibration load is provided in the collection path of the imager, so that the imager can be calibrated for each pass of the collector.
16. (Previously Presented) An imager as claimed in claim 14, wherein the at least one calibration load comprises two calibration loads, further comprising means for maintaining the two calibration loads at different temperatures, the temperatures straddling a range of subcutaneous body temperatures to be imaged.
17. (Previously Presented) An imager as claimed in claim 1 wherein the detector is linearly polarized.
18. (Previously Presented) An imager as claimed in claim 17 further including polarization means for altering the polarization of received radiation to be aligned with the polarization of the detector.

19. (Currently Amended) An imager as claimed in claim 1 wherein the scanning means for scanning scans the target area of the patient such that the collection path is in the form of a circumference of a notional cylinder at each of a plurality of indexed steps.

20. (Currently Amended) An imager as claimed in claim 1 wherein a spot on the collection path resides on a focal plane of the scanning means for scanning, such that the sensitivity profile is symmetrical and reduced about the spot along the collection path.

21. (Currently Amended) An imager as claimed in claim 1 wherein the defined sensitivity profile is non-uniform across and along the collection path based on known changes in a location of a focal spot of the scanning means for scanning along the collection path.

22. (Currently Amended) An imager as claimed in claim 1, wherein the isolation means for isolation comprises a quasi-optical isolator.

23. (Previously Presented) An imager as claimed in claim 1, further comprising a computer configured to display an image associated with data of the collected radiation corresponding to the subcutaneous body temperature of the patient.